

REMARKS

Claims 4-8 are now in the application. The indication that claims 6-8 are allowable is hereby noted with appreciation. Claim 1 has been cancelled without prejudice or disclaimer. Claims 4, 6, 7 and 8 have been amended to place them in independent from by including recitations from claim 1 and not to limit their scope. The amendments to the claims do not introduce any new matter.

Claims 4 and 5 are rejected under 35 USC 102(b) as being anticipated by US Patent application publication 2002/0055568 to Cruse et al. (hereinafter also referred to as "Cruse"). Cruse does not anticipate claims 4 and 5, as amended.

As is clear from the disclosure of the present application, an important aspect of the present invention resides in the surface-treated silica, which was treated with a silane-coupling agent X having the formula (I), which has a bulk density retention rate of 50 to 150%, and satisfies the specified relationship of:

$$1 \leq (\text{the weight of silane coupling agent X/the weight of silica before treatment}) \times 100 \leq 25.$$

Cruse does not disclose this aspect of the present invention.

Contrary to above, although, as commented in the Office Action, Cruse suggests the use of a silane-coupling agent included in the silane-coupling agent X according to the present invention, together with silica. However, the use of the pre-treated silica having a bulk density retention rate of 50-150, as a silane-coupling agent, with a diene-based rubber in the rubber composition according to the present invention is not disclosed by Cruse. Accordingly, the excellent processability, silica dispersibility, abrasion resistance and wet heating performance obtained therefrom are completely absent in Cruse.

Although the addition of the silane to the silica before adding the rubber is broadly suggested in Cruse, as mentioned in the office action, the specific description thereof is not included therein. The use of such pre-treated silica in the rubber composition is not exemplified in Cruse. As shown in the Examples of the present invention, the surface-treated silica must have a bulk density retention rate of 50 - 150%, for the purpose of the present invention, which was obtained by the heat treatment of 150°C x 1 hr in the Examples of the present application. This is completely absent in Cruse.

More specifically, as shown in the results of Table I (i.e., Comparative Example 2 and Example 3), Table III (i.e., Comparative Example 7 and Example 10) and Table V (i.e., Comparative Example 12 and Example 17), when the pre-treated silica (i.e., Examples 3, 7 and 10) was compounded with the diene rubber, superior results compared to those of Comparative Examples 2, 7 and 12, respectively (i.e., the same silane-coupling agent and the silica were compounded, without the pre-treating of the silica) in the rubber composition can be obtained. The results can be summarized as follows:

	Comp. Ex. 2	Ex. 3	Comp. Ex. 7	Ex. 10	Comp. Ex. 12	Ex. 17
<u>Formulation (parts by weight)</u>						
SBR	80	80	80	80	60	60
BR	20	20	-	-	40	40
NR	-	-	20	20	-	-
Silica	70	-	70	-	20	-
NXT	7.7	-	7.7	-	2.2	-
NXT treated silica (11%)(96 - 98%)	-	77.7	-	77.7	-	22.2
CB	10	10	10	10	40	40
6C	2	2	2	2	2	2
RD	2	2	2	2	3	3
Zinc White	2	2	2	2	-	-
Stearic acid	1	1	1	1	1	1
Oil	10	10	10	10	30	30
CZ	2.2	2.2	2.2	2.2	1.5	1.5
DPG	0.2	0.2	0.2	0.2	-	-
Sulfur	1.6	1.6	1.6	1.6	2.0	2.0
<u>Evaluation of physical properties</u>						
Mooney viscosity (130°C)	110	65	110	65	110 ^{*1}	65 ^{*1}
Mooney viscosity (160°C)	105	74	105	74	105 ^{*2}	74 ^{*2}
Mooney viscosity (180°C)	90	75	90	75	-	-

Payne effect(160°C)	81	51	81	60	-	-
Abrasion resistance (160°C)	100	140	100	130	97	127
M300/M100(160°C)	94	103	75	67	-	-
Wet skid performance (160°C)	98	115	98	115	-	-
Friction force on ice (-1.5°C)	-	-	-	-	98	115
Friction force on ice (-5°C)	-	-	-	-	101	135

*1: at 120°C, *2: at 135°C

As is clear from the results, the pre-treatment of the silica with the silane-coupling agent (NXT) is essential for the present invention. Although Cruse teaches the premixing or prereacting of silica and the blocked mercaptosilane in col. [0081], all of the Examples added the silica and the blocked mercaptosilane separately to a rubber. Thus, the above-mentioned unexpected results obtained from the use of the pre-treated silica having a bulk density retention of 50 - 150% are by no means obvious from Cruse.

The provisional rejection of claims 4 and 6 on the grounds of non-statutory obvious-type double patenting over US Patent application 11/573,619 is not deemed tenable since the present application was filed prior to US Patent application 11/573,619 and the claims in US Patent application 11/573,619 could not have been presented in this application. Please see MPEP 804 B I(a). For instance, the claims in US Patent application 11/573,619 recite a "sulfur deviation range of 50 to 200%". In addition, US Patent application 11/573,619 does not disclose the "bulk density retention of 50 - 150%" recited in the present claims.

In view of the above, consideration and allowance are respectfully solicited.

In the event the Examiner believes an interview might serve in any way to advance the prosecution of this application, the undersigned is available at the telephone number noted below.

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Reply to Office Action of March 19, 2009

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The Office is authorized to charge any necessary fees to Deposit Account No. 22-0185, under Order No. 21713-00058-US1 from which the undersigned is authorized to draw.

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BAA

Respectfully submitted,

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